

REMARKS

Claims 53 - 65 and 164 - 176 have been previously withdrawn. Claims 1 - 52 and 66 - 163 are currently pending in the present application. In view of the following remarks, it is respectfully submitted that these claims are in condition for allowance. In addition, Applicants would like to thank the Examiner for the finding of allowable subject matter in claims 14, 15, 40, 41, 74, 75, 102, 103, 128, 129, 149 and 150.

Claims 1 - 7, 10, 13, 16 - 26, 89 - 95, 98, 101 and 104 - 114 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,085,660 to Lin ("Lin") in view of U.S. Patent No. 5,709,686 to Talos et al. ("Talos"). *9/4/09 Office Action*, p. 2.

Claim 1 recites a bone plate having a longitudinal axis and comprising "an upper surface" and "a lower surface" along with "at least one first type of hole, the first type of hole being elongated and extending through the upper and lower surfaces, and having a central axis and a longitudinal axis, *wherein the first type of hole includes a threaded portion and a non-threaded portion, and the threaded portion extends through an angle of between about 190° and about 280° with respect to the central axis*" and "at least a second type of hole extending through the upper and lower surfaces, the second type of hole including an internal thread configured and dimensioned for engaging a threaded portion of a screw head."

The Examiner states that Lin discloses the invention substantially as claimed, except that the first hole includes a threaded portion that extends between about 190° and 280°. *9/4/09 Office Action*, p. 3. The Examiner cites Talos to cure this deficiency. Initially, it is respectfully submitted that Lin specifically teaches a locking plate system comprising a plate including a rectangularly shaped locking bore that corresponds to a rectangularly shaped locking end of a pin so that the pin cannot be moved relative to the locking bore. Thus, it is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to modify an elongated

locking bore of Lin to include a threaded portion that extends through an angle of between about 190° and 280°. Further, it is respectfully submitted that Talos does not cure the deficiency of Lin as Talos does not show or suggest a threaded portion extending between about 190° and 280°.

Specifically, it is respectfully submitted that Lin discloses a plate 10 including a locking bore 11 that is specifically shaped to receive a rectangularly shaped locking end 22 of a locking pin 20. *Lin*, col. 2, ll. 19 - 23. The locking bore 11 is thus similarly rectangularly shaped, having four corners, so that a locking end 22 received therein is prevented from rotating about a central axis of the locking bore 11. *Id.* at col. 2, ll. 42 - 45 and 49 - 56. Indeed, Lin teaches that the advantage of the described system is to prevent the loosening of the screws via rotation of the screws about an axis of the bore. *Id.* at col. 2, ll. 52 - 56. It is respectfully submitted that including a threaded portion extending about 190° to 280° in the plate 10 of Lin would change the shape of the locking bore 11 so that the locking bore 11 would no longer correspond to the shape of the locking end 22 and would be unable to prevent rotation relative thereto, thereby rendering the locking plate system of Lin entirely useless. Thus, it is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to modify the locking bore 11 to include a threaded portion extending about 190° to 280° with respect to the central axis.

Even if the locking bore 11 of Lin could be modified, however, it is respectfully submitted that Talos does not cure this deficiency. As acknowledged by the Examiner, Talos does not show or suggest that the threaded portion extends at an angle between 190° and 280° degrees. *9/4/09 Office Action*, p. 4. The Examiner, however, contends that it would have been obvious to extend the angle of the threaded portion through an angle between 190° and 280°. *Id.* As discussed in the Appeal Brief filed on August 21, 2008, it is respectfully submitted that Talos specifically teaches that the threaded portion of the hole cannot extend beyond an angle of 179° because of design constraints. Indeed, the Examiner found Applicants arguments in the Appeal Brief persuasive and withdrew the rejection over Talos. *See 1/23/09 Office Action*, p. 2. Specifically, Talos describes a bone plate comprising a hole 2 that includes a lower part facing a

bone application surface 4 that is approximately circular in a direction transverse to the plate and that flares conically in the plate longitudinal direction toward the bone application surface 4.

Talos, col. 2, ll. 35 - 39; *see* Fig. 3. An inside thread 3 is only in the circular segment of the hole 2 and because of design constraints, runs only in the lateral part of the plate over an angular range of about 60° to 179°, and preferably about 90° to 150°. Since the flared portion of the hole 2 is explicitly taught as non-threaded, the threaded portion 3 can inherently only extend at an angle smaller than 180 degrees – any more than this and it would not be possible to angle a screw 7 as shown in Figs. 6 and 7. Thus, it is respectfully submitted that it would not have been obvious to extend the threaded portion 3 of the hole 2 to extend at about 190° to 280°.

Accordingly, it is respectfully submitted that neither Lin nor Talos, either alone or in combination, show or suggest “*wherein the first type of hole includes a threaded portion and a non-threaded portion, and the threaded portion extends through an angle of between about 190° and about 280° with respect to the central axis,*” as recited in claim 1. Thus, it is respectfully submitted that claim 1 is not rendered obvious by Lin in view of Talos and that the rejection of this claim should be withdrawn. Because claims 2 - 7, 10, 13 and 16 - 26 depend from and include all of the limitations of claim 1, it is respectfully submitted that these claims are also allowable.

Similarly, claim 89 recites a bone plate having a longitudinal axis and comprising “an upper surface” and “a lower surface” along with “at least one first type of hole, the first type of hole being elongated and extending through the upper and lower surfaces, and having a central axis a longitudinal axis, *wherein the first type of hole is at least partially threaded and the threaded portion of the hole tapers inward with respect to the central axis*” and “at least a second type of hole extending through the upper and lower surfaces, the second type of hole including an internal thread configured and dimensioned for engaging a threaded portion of a screw head.

As discussed above in regard to claim 1, it is respectfully submitted that the thread 3 of

Talos only extends around the *circular portion* of the hole 2 such that the threaded portion of the hole 2 does not taper. *See Talos* at col. 2, ll. 39 - 44. Indeed, the only portion of the hole 2 that tapers inward is a conical countersink 5, which is clearly shown and taught as being non-threaded to slidably receive a spherical head 8 of the bone screw 7. *Id.* at col. 2, ll. 51 - 54. Accordingly, it is respectfully submitted that neither Lin nor Talos, either alone or in combination, show or suggest “*wherein the first type of hole is at least partially threaded and the threaded portion of the hole tapers inward with respect to the central axis,*” as recited in claim 89. Thus, it is respectfully submitted that claim 89 is not rendered obvious by Lin in view of Talos and that the rejection of this claim should be withdrawn. Because claims 90 - 95, 98, 101 and 104 - 114 depend from and include all of the limitations of claim 89, it is respectfully submitted that these claims are also allowable.

Claims 27 - 39, 42 - 52, 66 - 73, 76 - 88, 115 - 127, 130 - 148 and 151 - 163 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,749,872 to Kyle et al. (“Kyle”) in view of Talos. *9/4/09 Office Action*, p. 5.

Claim 27 recites a bone plate having a longitudinal axis and comprising “an upper surface” and “a lower surface” along with “at least one first type of hole, the first type of hole being elongated and extending through the upper and lower surfaces, and having a central axis and a longitudinal axis, *wherein the first type of hole includes a threaded portion and a non-threaded portion, and the threaded portion extends through an angle of between about 190° and about 280° with respect to the central axis*” and “at least a second type of hole extending through the upper and lower surfaces, wherein the second type of hole is substantially non-threaded.”

The Examiner states that Kyle discloses the invention substantially as claimed, except for the threaded portion that extends through an angle of between about 190° and 280° with respect to the central axis. *9/4/09 Office Action*, p. 6. The Examiner cites Talos to cure this deficiency. It is respectfully submitted, however, that Kyle specifically teaches apertures including

countersunk holes for receiving a head of a bone screw. Kyle does not show or suggest that it would be desirable to receive a locking head screw within these apertures. Thus, it is respectfully submitted that it would not have been obvious to one of ordinary skill in the art to modify the apertures to include threaded portions that extends from between about 190° to 280°. It is also respectfully submitted that Talos does not cure this deficiency.

Specifically, Kyle describes a fixator 28 including apertures 60 extending therethrough and sized to receive bone screws 30 to secure the fixator 28 to a shaft portion 25 of a femur 24. Kyle, col. 4, ll. 58 - 62. The apertures 60 include a countersunk hole 82 to receive a head of the bone screw 30. *Id.* at col. 4, ll. 62 - 64. As shown in Fig. 10, all of the bone screws 30 include non-locking heads such that it would not have been obvious to include a threaded portion in the apertures 60 of Kyle. Indeed, Kyle does not show or suggest the desirability of including threaded portions therein.

Even if, however, the apertures 60 of Kyle could have been modified, it is respectfully submitted that Talos does not cure this deficiency. Specifically, it is respectfully submitted that Talos does not show or suggest a threaded portion extending from about 190° to 280°. Indeed, as discussed above in regard to claim 1 and previously found persuasive by the Examiner, the holes 2 of Talos are structurally prevented from extending beyond 179°.

Accordingly, it is respectfully submitted that neither Kyle nor Talos, either alone or in combination, show or suggest “*wherein the first type of hole includes a threaded portion and a non-threaded portion, and the threaded portion extends through an angle of between about 190° and about 280° with respect to the central axis,*” as recited in claim 27. Thus, it is respectfully submitted that claim 27 is not rendered obvious and that the rejection of this claim should be withdrawn. Because claims 28 - 39 and 42 - 52 depend from and include all of the limitations of claim 27, it is respectfully submitted that these claims are also allowable.

Claim 66 recites a bone plate having a longitudinal axis and comprising “an upper surface” and “a lower surface” along with “at least one first type of hole extending through the upper and lower surfaces, and having a first central axis and being elongated in a direction substantially aligned with the longitudinal axis, wherein the first type of hole is non-threaded and has an outer perimeter, at least a portion of the outer perimeter tapering inward from the upper surface to the lower surface to form at least one ramp surface for engagement with a first screw head” and “at least a second type of elongated hole extending through the upper and lower surfaces, the second type of hole having a second central axis and a longitudinal axis, *wherein the second type of hole includes a threaded portion and a non-threaded portion, and the threaded portion extends through an angle of between about 190° and about 280° with respect to the second central axis.*”

For at least the same reasons as discussed above in regard to claim 27, it is respectfully submitted that claim 66 is not rendered obvious by Kyle in view of Talos and that the rejection of this claim should be withdrawn. Because claims 67 - 73 and 76 - 88 depend from and include all of the limitations of claim 66, it is respectfully submitted that these claims are also allowable.

Similarly, claim 115 recites a bone plate having a longitudinal axis and comprising “an upper surface” and “a lower surface” along with “at least one first type of hole, the first type of hole being elongated and extending through the upper and lower surfaces, and having a central axis and a longitudinal axis, *wherein the first type of hole is at least partially threaded and the threaded portion of the hole tapers inward with respect to the central axis*” and “at least a second type of hole extending through the upper and lower surfaces, wherein the second type of hole is substantially non-threaded.”

The Examiner contends that Kyle discloses the invention substantially as claimed, except for a threaded portion that tapers inward. *9/4/09 Office Action*, p. 7. The Examiner cites Talos to cure this deficiency. As discussed above in regard to claim 89, it is respectfully submitted that

Talos does not show or suggest a threaded portion of the hole that tapers inward with respect to the central axis. Thus, it is respectfully submitted that Talos does not cure the deficiency of Kyle. Accordingly, it is respectfully submitted that claim 115 is not rendered obvious by Kyle in view of Talos and that the rejection of this claim should be withdrawn. Because claims 116 - 127 and 130 - 140 depend from and include all of the limitations of claim 115, it is respectfully submitted that these claims are also allowable.

Claim 141 recites a bone plate having a longitudinal axis and comprising “an upper surface” and “a lower surface” along with “at least one first type of hole extending through the upper and lower surfaces, and having a first central axis and being elongated in a direction substantially aligned with the longitudinal axis, *wherein the first type of hole is non-threaded and has an outer perimeter, at least a portion of the outer perimeter tapering inward from the upper surface to the lower surface to form at least one ramp surface for engagement with a first screw head*” and “at least a second type of elongated hole extending through the upper and lower surfaces, the second type of hole having a second central axis and a longitudinal axis, wherein the hole is at least partially threaded and the threaded portion of the hole tapers inward with respect to the second central axis.”

For at least the same reasons as discussed above in regard to claim 115, it is respectfully submitted that claim 141 is not rendered obvious by Kyle in view of Talos and that the rejection of this claim should be withdrawn. Because claims 142 - 148 and 151 - 163 depend from and include all of the limitations of claim 141, it is respectfully submitted that these claims are also allowable.

Claims 8, 9, 11, 12, 96, 97, 99 and 100 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Lin in view of Talos and further in view of Kyle. *9/4/09 Office Action*, p. 7.

It is respectfully submitted that Kyle does not cure the deficiency of Lin in view of Talos

as discussed above in regard to claims 1 and 89. Since claims 8, 9, 11 and 12 depend from and include all of the limitations of claim 1 and claims 96, 97, 99 and 100 depend from and include all of the limitations of claim 89, it is respectfully submitted that these claims are also allowable and that the rejection of these claims should be withdrawn.

In light of the foregoing, Applicants respectfully submit that all of the pending claims are in condition for allowance. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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